

TAXONOMIC NOTES ABOUT THE MIDDLE AMERICAN GENUS  
*CYRTOLAUS* BATES (COLEOPTERA: CARABIDAE: PTEROSTICHINI)

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*Abstract.*—Based on features of adults and on chorological considerations, 2 new species of *Cyrtolaus* (*s. str.*) are described from Oaxaca, México: *C. oaxacanus* (type locality—Sierra Zempoal, 10.4 km S. Totontepec), and *C. whiteheadi* (type locality—Sierra Madre de Oaxaca, 11.7 km E. Huautla de Jimenez). Character states and localities of specimens not recorded previously of the Chiapan-Guatemalan *C. subiridescens* Whitehead and Ball, *C. ricardo* Whitehead and Ball, *C. furculifer* Bates, and *C. grumifer* Whitehead and Ball confirm generally the published treatments of these taxa.

*Key Words:* new species, phylogeny, biogeography, Mexico, Coleoptera, Carabidae

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In August, 1965, toward the beginning of the 14-month period that Don Whitehead and I spent in México, we found in a cloud forest in central Chiapas 2 carabid adults of rather remarkable form (heavy-bodied, but with strikingly long mandibles, narrow head, and markedly vaulted elytra) that we thought represented some aberrant species of the platynine genus *Colpodes* (*sensu latissimi*). Some years later, after studying many of the types that H. W. Bates had described in writing the carabid part of the *Biologia Centrali-Americana*, we concluded that our specimens were members of the genus *Cyrtolaus* Bates (1882: 99). We described this species and four others as new, in a revision of *Cyrtolaus* (Whitehead and Ball 1975). In that treatment, we combined in a single genus *Ithyolus* Bates and *Cyrtolaus*, ranking each group as a subgenus.

Because the range of elytral features of *Cyrtolaus* (*sensu lato*) seemed to bridge the range of elytral features of the tribes Pterostichini and Agonini (= Platynini), we concluded that this genus belonged in neither tribe in the restricted sense, that they should

be ranked as subtribes of Pterostichini, and that *Cyrtolaus* should go in its own subtribe, *Cyrtolaina*, which we proposed. The last decision was based on both the seeming intermediate position of *Cyrtolaus* in the Pterostichini, and its seeming relict status—the genus seemed not to have close phylogenetic relatives.

Liebherr (1986) discovered that 2 Antillean species, described originally as members of *Colpodes*, in fact represented an undescribed genus, which he named *Barylaus*. Further, Liebherr determined that *Barylaus* and *Cyrtolaus*, though phylogenetically isolated, were endemic New World representatives of the pterostichine subtribe *Coelostomina*, a group that had been thought to be confined to the Old World (except for an introduced species of *Coelostomus* in the Antilles). Thus, the name *Cyrtolaina* Whitehead and Ball, 1975 is a junior synonym of *Coelostomina*. Also, Liebherr argued that the platynines should be ranked as a tribe, and thus equivalent to the Pterostichini, and not as a component of the latter.

I regard as elegant Liebherr's discovery

of the subtribal relationships of *Cyrtolaus* and *Barylaus*. However, on the basis of chorological considerations, I do not accept his conclusion that *Barylaus* is more closely related to the geographically distant Afro-tropical lineage of *Coelostomina* than to the more proximal Middle American *Cyrtolaus*.

As knowledge of relationships of *Cyrtolaus* was increasing, so was additional material accumulating of the species. Below, I report and analyze the new information thus acquired, to seek validation of the structural and chorologically diagnostic features of taxa previously described, and to make known taxa not known previously.

## MATERIAL AND METHODS

### Material

This study is based on 36 adults of the subgenus *Cyrtolaus*, collected in the Mexican states of Oaxaca and Chiapas, and in southwestern Guatemala. Four-letter codens used in the text to indicate sources or depositories of study material are:

- CASC Department of Entomology, California Academy of Sciences;  
 UASM Department of Entomology, University of Alberta; and  
 USNM Department of Entomology, United States National Museum of Natural History.

### METHODS

Recognition.—Species were identified using the key and illustrations in Whitehead and Ball (1975), and identity was confirmed by examination of the male genitalia, which were prepared using standard techniques. Specimens the combination of features of which did not fit the couplets and regarded initially as taxonomically distinct entities were examined in detail. If such examination showed them to be distinctive in few and varied features, the specimens were included as members of the described species to which each was most similar. If the more

detailed examination suggested otherwise, the specimens were regarded as taxonomically distinct, and were ranked as species. For specific ranking of *C. oaxacanus*, new species, primacy was given to chorological features. See below for details.

Measurements.—The following measurements were made as part of the descriptions of taxa and to compare with those reported by Whitehead and Ball (1975: Tables 1–3).

- HL = length of head from base of dorsal condyle of left mandible to posterior margin of eye;  
 ML = length of left mandible, from apex to base of dorsal condyle;  
 PL = length of pronotum along mid-line, from anterior to posterior margin;  
 EL = length of elytra, along suture, from basal ridge to apex.

Size was expressed as Standardized Body Length (SBL) and is the sum of HL + PL + EL. Two ratios were computed: ML/PL and PL/EL.

Not reported in detail are values for the ratio Antennomere 3: width/length. Values are between 0.26 and 0.32, thus well within the range reported previously (0.26–0.38) for *Cyrtolaus* (*s. str.*), excluding *C. lobipennis*. These relatively low values indicate the relatively elongate antennae that are characteristic of the most derived lineage of *Cyrtolaus*.

Chorology.—Localities reported are in the following mountain ranges: Sierra Madre de Oaxaca and Sierra Zempoal, in the Mexican state of Oaxaca (see outline map of the region in Ball and Roughley [1982: 364, Fig. 63]); and Mesa Central, in central and northwestern Chiapas, and Sierra Madre de Chiapas, in southeastern Chiapas and southwestern Guatemala (see outline map of region in Whitehead and Ball [1975: 606, Figs. 22, 23]).

### KEY TO SPECIES OF *CYRTOLAUS* BATES, BASED ON CHARACTERISTICS OF ADULTS

This key is modified from the one presented by Whitehead and Ball (1975: 598), and includes all known species of *Cyrtolaus*.

01. Pronotum with anterior marginal bead complete; postero-lateral setae near posterior angles. Elytron with plica clearly developed, epipleuron interrupted ("crossed"); interneurs impunctate. Abdominal sternum VII with 2 setae in male, 4 in female ..... Subgenus *Ithyotus* Bates  
*C. orizabae* Bates
- 01'. Pronotum without anterior marginal bead; postero-lateral setae distinctly anterad posterior angles (Figs. 2-4). Elytron with epipleuron interrupted or not; interneurs more or less punctate (Figs. 5A-7A). Abdominal sternum VII with 4 setae in male, 6 to 8 setae in female ..... Subgenus *Cyrtolaus* ..... 02
- 02(01'). Elytron with epipleuron interrupted by plica. Labrum with 4 marginal setae ..... *C. lobipennis* Bates
- 02'. Elytral epipleuron not interrupted. Labrum with 6 marginal setae ..... 03
- 03(02'). Elytron with microsculpture of transverse lines, surface faintly iridescent; interneurs grossly punctate; intervals carinate; apex spined or not, spines shorter or longer (Figs. 6A, B) ..... *C. subiridescens* Whd. & Ball, p. 237.
- 03'. Elytron with microsculpture mesh pattern isodiametric; apex spined ..... 04
- 04(03'). Head with 2 (single pair) or 3 supraorbital setigerous punctures ..... 05
- 04'. Head with 4 (2 pairs) supraorbital setigerous punctures ..... 07
- 05(04). Elytron with interval 2 apically more or less flat, not distinctly swollen (Figs. 5A, B). Geographical range—Hautla Plateau, Oaxaca ..... *C. whiteheadi*, new species, p. 236.
- 05'. Elytron with interval 2 swollen apically. Geographical range—Mesa Central and Sierra Madre de Chiapas, Chiapas, and Guatemala ..... 06
- 06(05'). Elytron with interval 3 markedly raised apically. Disc of pronotum with microsculpture normal, surface without sericeous luster. Geographical range—Sierra Madre de Chiapas, Chiapas and Guatemala ..... *C. furculifer* Bates, p. 238.
- 06'. Elytron with interval 3 not raised apically. Disc of pronotum with microlines dense, surface with sericeous luster. Geographical range—western part of Mesa Central, Chiapas ..... *C. grunufer* Whd. & Ball, p. 238.
- 07(04'). Elytron with interneurs grossly punctate. Pronotum with hind angles rounded, lobate, lateral margins broadly rounded, not sinuate; anterior angles produced. Geographical range—central Guatemala ..... *C. spinicauda* Bates
- 07'. Elytron with interneurs hardly punctate to distinctly so. Pronotum with hind angles various; lateral margins less rounded, or sinuate posteriorly (Figs. 2, 4); anterior angles not produced ..... 08
- 08(07'). Geographical range—Sierra Madre de Chiapas, southeastern Chiapas and southwestern Guatemala. Elytron with apical declivity gradual (Fig. 7B), apical spine longer or shorter (Fig. 7A) ..... *C. ricardo* Whd. & Ball, p. 238.
- 08'. Geographical range—Mesa Central of Chiapas, or mountains of Oaxaca. Elytron with apical declivity various; apical spine short (Fig. 5A) ..... 09
- 09(08'). Pronotum with posterior angles rectangular. Elytron with interneurs distinctly punctate on disc; slope of elytral declivity more abrupt. Geographical range—Mesa Central, Chiapas ..... *C. brevispina* Whd. & Ball
- 09'. Pronotum with posterior angles acute. Elytron with interneurs very obscurely punctate on disc; apical declivity sloped gradually (Fig. 5B) ..... 10
- 10(09'). Larger (SBL more than 11.0 mm); pronotum relatively shorter (ML/PL 0.66-0.74). Male with apex of median lobe pointed (Fig. 1A). Geographical range—Sierra Zempoal (vicinity of Volcan Zempoaltepetl, Oaxaca) ..... *C. oaxacanus*, new species, p. 232.
- 10'. Smaller (SBL less than 10.0 mm); pronotum relatively longer (ML/PL 0.60). Geographical range—Sierra Madre de Oaxaca (near Valle Nacional, Oaxaca) ..... *C. newtoni* Whd. & Ball

NEW TAXA, NEW LOCALITY RECORDS, AND VARIATION IN DIAGNOSTIC FEATURES

*Cyrtolaus oaxacanus*, NEW SPECIES  
(Figs. 1A-C)

Type material.—HOLOTYPE male and ALLOTYPE female, each labelled: MEX. OAXACA 10.4 km./ s. Totontepec cloud/forest: tree ferns/ in litter 2480 m./ June 17, 1979 79-38; MEXICAN EXP. 1979/ J. S. Ashe, G. E. Ball/ and D. Shepley/ Collec-

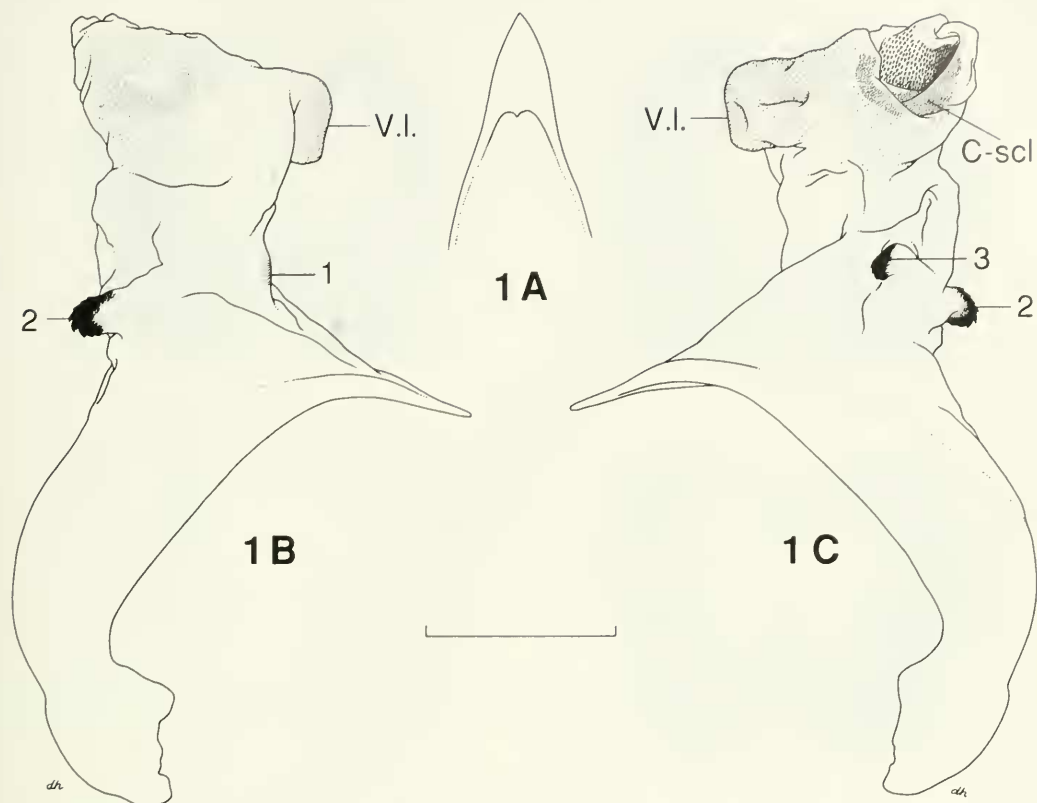


Fig. 1. Male genitalia of *Cyrtolaus oaxacanus*, new species: A, median lobe, apical portion, dorsal aspect; B and C, median lobe, with internal sac everted—B, left lateral aspect; C, right lateral aspect. Scale bar = 1.0 mm. Legend (for features of internal sac): 1, 2, and 3, spinose sclerites 1, 2, and 3, respectively; C-scl, C-sclerite; V.l., ventral lobe.

tors. The holotype is in USNM, and allotype in UASM.

Type locality.—México, Oaxaca, Sierra Zempoal, 10.4 km S. Totontepec.

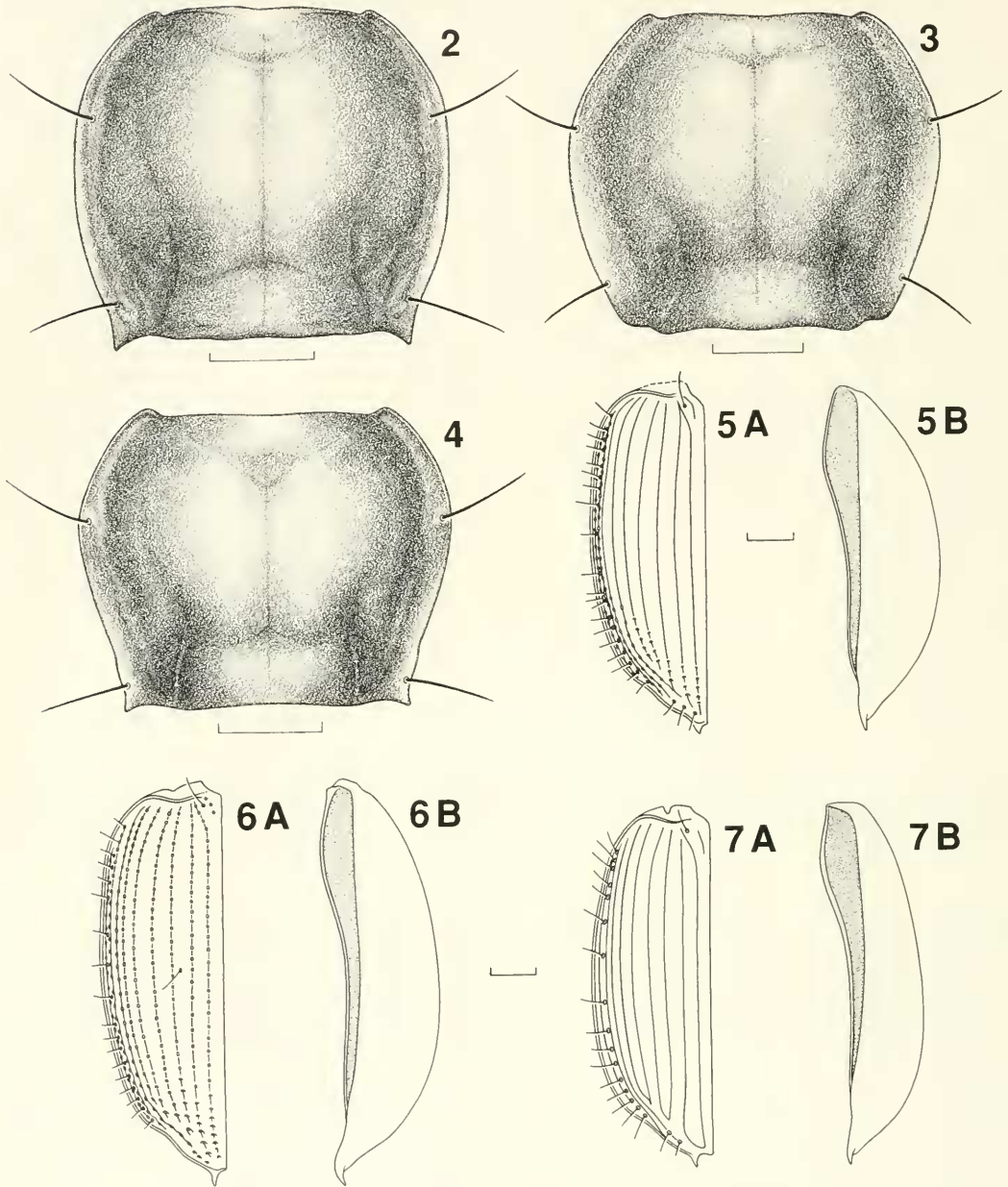
Derivation of specific epithet.—The Latinized adjectival form of “Oaxaca,” the name of the Mexican state that includes the type locality of this species.

Recognition.—The type specimens resemble closely the holotype of *C. newtoni* Whitehead and Ball. However, they are larger (Table 1), and the pronotum is relatively shorter, as reflected by higher values for the ratio ML/PL (Table 2). These 2 taxa occur in different but adjacent mountain ranges (*C. oaxacanus* in the Sierra Zempoal, at 2400 m; *C. newtoni* in the Sierra Madre de Oaxaca, at 1700 m).

The 2 pairs of supraorbital setae distinguish adults of *C. oaxacanus* from *C. whiteheadi*, the third species of *Cyrtolaus* known from Oaxaca, the adults of which have only a single pair of such setae.

The virtually impunctate elytral interners, angulate elytral apices and isodiametric mesh pattern of the elytra distinguish adults of *C. oaxacanus* from those in the mountains of Chiapas and Guatemala. Males are distinguished by details of the genitalia (Figs. 1A–C): apex of median lobe acute (Fig. 1A); internal sac with sclerite 1 hardly evident (Fig. 1B), and spinose sclerites 2 and 3 small, and widely separated from one another (Figs. 1B, C).

Description.—Adults with character states of subgenus *Cyrtolaus*, and following. Data



Figs. 2-7. Pronota and left elytra of species of *Cyrtolaus*. 2-4, Pronotum, dorsal aspect of: 2, *C. whiteheadi*, new species; 3, *C. subiridescens* Whitehead and Ball; 4, *C. ricardo* Whitehead and Ball. 5-7, Left elytron, A, dorsal aspect, B, outline of left lateral aspect, respectively, of: 5, *C. whiteheadi*, new species; 6, *C. subiridescens* Whitehead and Ball; and 7, *C. ricardo* Whitehead and Ball.

Table 1. Data about variation in Standardized Body Length (SBL—mm) among samples of the species of *Cyrtolaus* (*s. str.*).

Species and Localities	Males			Females		
	N	Range	Mean	N	Range	Mean
<i>C. oaxacanus</i>						
Toton., Oax.	1	11.32		1	11.26	
<i>C. whiteheadi</i>						
Rio Sant., Oax.				2	11.12–12.19	11.65
<i>C. subiridescens</i>						
Mitont., Chis.	7	10.92–11.39	11.27	3	10.99–11.99	11.39
Tenejapa, Chis.	1	10.72				
Las Marg., Chis.	2	10.38–11.26	10.82	2	11.06–11.32	11.19
Las Rosas, Chis.	1	11.93				
<i>C. ricardo</i>						
Tacaná, Chis.	7	10.72–11.86	11.14	1	10.99	
San Marc, Guat.	1	10.65		2	10.65–10.99	10.82
<i>C. furculifer</i>						
Prov., Chis.	1	13.33		1	11.52	
Muxbal, Chis.				2	12.73–13.33	13.03
<i>C. grumifer</i>						
Rizo Oro, Chis.				1	12.66	

Table 2. Data about variation in values for the ratio ML/PL among sample of the species of *Cyrtolaus* (*s. str.*).

Species and Localities	Males			Females		
	N	Range	Mean	N	Range	Mean
<i>C. oaxacanus</i>						
Toton., Oax.	1	0.66		1	0.74	
<i>C. whiteheadi</i>						
Rio Sant., Oax.				2	0.59–0.61	0.60
<i>C. subiridescens</i>						
Mitont., Chis.	7	0.64–0.69	0.65	3	0.65–0.71	0.67
Tenejapa, Chis.	1	0.67				
Las Marg., Chis.	2	0.67–0.69	0.68	2	0.64–0.65	0.645
Las Rosas, Chis.	1	0.59				
<i>C. ricardo</i>						
Tacaná, Chis.	7	0.65–0.68	0.67	1	0.72	
San Marc, Guat.	1	0.73		2	0.75	0.75
<i>C. furculifer</i>						
Prov., Chis.	1	0.55		1	0.63	
Muxbal, Chis.				2	0.59–0.63	0.61
<i>C. grumifer</i>						
Rizo Oro, Chis.				1	0.56	

Table 3. Data about variation in values for the ratio PL/EL among sample of the species of *Cyrtolaus* (*s. str.*).

Species and Localities	Males			Females		
	N	Range	Mean	N	Range	Mean
<i>C. oaxacanus</i>						
Toton., Oax.	1	0.42		1	0.38	
<i>C. whiteheadi</i>						
Rio Sant., Oax.				2	0.44–0.46	0.45
<i>C. subiridescens</i>						
Mitont., Chis.	7	0.44–0.48	0.46	3	0.41–0.46	0.44
Tenejapa, Chis.	1	0.46				
Las Marg., Chis.	2	0.44–0.46	0.45	2	0.43–0.44	0.435
Las Rosas, Chis.	1	0.47				
<i>C. ricardo</i>						
Tacaná, Chis.	7	0.41–0.44	0.43	1	0.40	
San Marc, Guat.	1	0.42		2	0.40	0.40
<i>C. furculifer</i>						
Prov., Chis.	1	0.46		1	0.44	
Muxbal, Chis.				2	0.41–0.44	0.42
<i>C. grunifer</i>						
Rizo Oro, Chis.				1	0.50	

about variation in Standardized Body Length, and in values for ratios ML/PL and PL/EL, in Tables 1–3.

Microsculpture. Average for *Cyrtolaus* (*s. str.*), elytra with mesh pattern isodiametric.

Fixed setae. Average for *Cyrtolaus* (*s. str.*)

Head, antennae and mouthparts average.

Pronotum (slightly damaged in holotype; somewhat distorted in allotype) probably normally similar to that of *C. newtoni* and *C. whiteheadi* (Fig. 2; description below).

Elytra. In form, similar to Figs. 5A, and B, but apical angles less projected. Interners on disc nearly impunctate, but punctures on apical declivity of moderate size.

Legs. Average for *Cyrtolaus* (*s. str.*).

Male genitalia (Figs. 1A–C). Median lobe in dorsal aspect with apical portion (Fig. 1A) moderately long, tapered to a point. Endophallus (internal sac) with sclerite 1 hardly evident (Fig. 1B), spinose sclerites 2 and 3 of moderate size, prebasal in position, widely separated from one another; C-scler-

ite evident, on right side; ventral lobe (V.I.) prominent.

Habitat.—The type specimens were collected in cloud forest, under bark of a fallen tree, in the vicinity of tree ferns, growing on a moderately steep slope.

Geographical distribution.—Known from the type locality only.

Chorological affinities.—This species is geographically isolated from all other species of *Cyrtolaus*. The geographically closest species is *C. newtoni*.

Phylogenetic relationships.—Probably this species is related to *C. newtoni* and *C. whiteheadi*. A more detailed resolution cannot be offered now.

#### *Cyrtolaus whiteheadi*, NEW SPECIES (Figs. 2, 5A, B)

Type material.—HOLOTYPE female and PARATYPE female, each labelled: MEX. Oaxaca/ Rio Santiago, 11.7/ km. e. Huautla de/ Jiminez 1150 m./ cloud forest/ July 13,

1975; MEX. EXP. 1975/ G.E. Ball & H.E. Frania/ collectors. Holotype in USNM and paratype in UASM.

Type locality.—México, Oaxaca, Sierra Madre de Oaxaca, 11.7 km E. Huautla de Jimenez.

Derivation of specific epithet.—Latinized genitive form of the surname of the late Donald R. Whitehead, in whose honor and memory this species is named.

Recognition.—Adults of this species have a single pair of supraorbital setae, a feature distinguishing them from all other species of *Cyrtolaus*, except *C. furculifer* Bates and *C. grumifer* Whitehead and Ball. Adults of the latter 2 species have the apical portions of one or more elytral intervals elevated (*cf.* Whitehead and Ball 1975: 600, Figs. 12, 13A, B), whereas in *C. whiteheadi*, the apical portion of interval 2 is not more convex than is the basal portion of this interval (Figs. 5A, B).

Description.—With features of subgenus *Cyrtolaus* and following. See Tables 1–3 for data about variation in Standardized Body Length and in values for ratios ML/PL and PL/EL.

Head, antennae and mouthparts average for subgenus *Cyrtolaus*.

Pronotum. Form as in Fig. 2, anterior angles obtuse, narrow, protruded slightly; posterior angles subspinose, protruded posteriorly; lateral areas elevated, more broadly so posteriorly; lateral margins slightly sinuate posteriorly.

Elytra. In form, as in Figs. 5A, B, vaulted. Humerus narrowly rounded; lateral margin sinuate preapically, apex with short spine about opposite termination of interval 2. Intervals slightly convex; interneurs finely and sparsely punctate on disc, punctures larger on apical declivity.

Legs. Average for subgenus *Cyrtolaus*.

Habitat.—The type material was found in damp leaf litter on a gentle slope in cloud forest.

Geographical distribution.—Known from the type locality only.

Chorological affinities.—The locality for this species is the northernmost for the subgenus *Cyrtolaus*. It is 80 km west of the locality of the next nearest species (*C. newtoni*) and is on the western rim of the Rio Grande basin, which is probably one of the major barriers for montane taxa in eastern México.

Phylogenetic relationships.—Evidently, this species is related to *C. newtoni* and *C. oaxacanus*, based on the derived form of the posterior angles of the pronotum, and on geographical proximity but disjunct distribution of the three species.

#### *Cyrtolaus subiridescens* Whitehead and Ball (Figs. 3, 6A, B)

Material examined.—Sixteen specimens, as follows. All localities are in México, in the state of Chiapas, on the Mesa Central.

Municipio Mitontik, 11 km N. Tzontehuitz, on road to Pueblo Viejo, 1981 m, X.22.1976 (7 males, 3 females—CASC). Municipio Tenejapa, Tenejapa Center, 2042 m, III.15.1975 (male—CASC). Municipio Las Margaritas, 48 km NE Las Margaritas on road to Campo Alegre, 2134 m, X.25.1976 (2 males, 2 females—CASC). Municipio Las Rosas, Villa Las Rosas, 1371 m, X.30.1976 (female—CASC).

Taxonomic notes.—In body size (SBL) and in proportions (ML/PL and PL/EL) all of the specimens are within the ranges reported previously (Tables 1–3; *cf.* Whitehead and Ball 1975: Tables 1–3). The material from Mitontik and Tenejapa is typical in all respects, as determined by comparison with paratypes of *C. subiridescens*.

The specimens collected at Las Margaritas and Villa Las Rosas, however, are distinctive in having fairly long apical elytral spines (Figs. 6A, B). In pronotal form (Fig. 3) and in details of the male genitalia, these specimens are typical of *C. subiridescens*. The difference in elytral spination, in the genus as a whole, is important phylogenetically, and one might be tempted on this basis to propose taxonomic recognition, at



the subspecies level. The localities, however, are within the known geographical range of *C. subiridescens* (Whitehead and Ball 1975: Fig. 23). Under this circumstance, I doubt that the difference in elytral spination is indicative of anything more than minor intraspecific geographical variation.

***Cyrtolaus ricardo* Whitehead and Ball**  
(Figs. 4, 7A, B)

Material examined.—Eleven specimens, as follows. The localities are in the Sierra Madre de Chiapas, on the Pacific versant of Middle America. MEXICO, Chiapas. Volcan Tacaná, NE slope, 1830 m, XII.20.1976 (seven males, female—UASM). GUATEMALA. San Marcos Sivinal, cloud forest, 2621 m, XII.31.1976 (male, 2 females—UASM).

Taxonomic notes.—Tables 1–3 provide data about variation in Standardized Body Length and in values for the ratios ML/PL and PL/EL. The specimens collected on Tacaná are indistinguishable from the type series, which was collected in the same general area. The specimens collected at San Marcos Sivinal, on the slopes of Volcan Tajumulco, adjacent to and within a few hours walk from Tacaná, are similar to the Tacaná material in pronotal form (Fig. 4), and in details of the male genitalia (2 males dissected). In proportions, the 2 groups differ slightly in values for the ratio ML/PL (Table 2). Also, the apical spines of the elytra of the San Marcos specimens are shorter (Figs. 7A, B).

Elevation.—The new material collected on Volcan Tacaná extends the known altitudinal range of *C. ricardo* downward by ca. 900 m. However, this species and *C. furculifer*, the only other species of *Cyrtolaus* inhabiting the slopes of this volcano, remain allopatric, though it seems likely that their ranges are (or were) in contact, at least marginally.

Conclusion.—The new material is within the general geographical range that we ascribed to *C. ricardo* (Whitehead and Ball

1975: 610). The range of morphological variation is extended slightly, but not taxonomically significantly so.

***Cyrtolaus furculifer* Bates**

Material examined.—Five specimens, as follows. All were collected on the north-eastern slopes of the Volcan Tacaná, in southeastern Chiapas, México. Union Juarez, Barranca Providencia, montane tropical forest, in leaf litter, 1500 m, XII.15.1975 (male and female, UASM). Union Juarez, Finca Muxbal, *ex* pile of mouldy wood, 1430 m, XII.26.1975 (2 females—UASM). Rio Muxbal, 1463 m, XII.21.1976 (female, UASM). Union Juarez, agricultural land, 1720 m, XII.14–26.1975 (set of elytra—UASM).

Taxonomic notes.—The specimens noted above, most of them collected in or near the Barranca Providencia, from where Whitehead and Ball (1975: 611) reported this species, are typical members of *C. furculifer*, as shown by Standardized Body Length and proportions (Tables 1–3). The individual collected at 1720 m extends the known vertical range of this species upward by ca. 200 m, but still beneath the known altitudinal range of *C. ricardo* (see comments for that species, above).

***Cyrtolaus grumifer* Whitehead and Ball**

Material examined.—One female, from Chiapas, México, in the Mesa Central: Cerro Baul, NW slope, west of Rizo de Oro, 1768 m, X.2.1979 (CASC).

Taxonomic notes.—This specimen is within the morphological range of the type material (Whitehead and Ball 1975: 612) as shown by Standardized Body Length and body proportions (Tables 1–3). It is also within the reported vertical range (1524–1829 m), and from northwestern Chiapas. However, Cerro Baul is about 160 km from the only area reported previously for *C. grumifer*. This is a marked but not surprising range extension for this species.

## NOTES ABOUT PHYLOGENETIC ASPECTS

A reconstructed phylogeny of the species of *Cyrtolaus* was offered by Whitehead and Ball (1975: 615, Fig. 25). The new data suggest that the Oaxacan species (*C. oaxacanus*, *C. newtoni*, and *C. whiteheadi*) form a clade apart from a Chiapan-Guatemalan complex (*C. brevispina*, *C. ricardo*, *C. spinicauda*, *C. furculifer*, and *C. grumufifer*).

The longer apical elytral spines reported for 2 samples of *C. subiridescens* render equivocal the position of this taxon. If these spines were developed independently of the Chiapan-Guatemalan complex noted above, *C. subiridescens* could continue to occupy a relatively basal position, as postulated previously by Whitehead and Ball (1975). If, however, the longer spines are indicative of relationship (and their absence from most specimens of *C. subiridescens* a loss), then this species could be placed with the Chiapan-Guatemalan complex. I favor the latter alternative on chorological grounds. This resolution postulates a monophyletic Oaxacan assemblage and a monophyletic Chiapan-Guatemalan assemblage, separated from one another by the Isthmus of Tehuantepec.

In part, such a hypothesis depends upon the relationships of the Oaxacan species of *Cyrtolaus*. Until males are known for *C. newtoni* and *C. whiteheadi*, their relationships to one another and to *C. oaxacanus* will remain equivocal. Consequently, it seems premature to pursue this topic further at this time.

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